MARSHALL STAR

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STS-87 Lifts Off, Carrying Marshall Science Experiments

Researchers at the Marshall Center have reported "spectacular" science results from the primary scientific cargo aboard Columbia since the Space Shuttle's launch a week ago.

From almost the beginning of the scheduled 16-day flight, researchers involved in the fourth United States Microgravity Payload (USMP-4) have been uncovering important findings.

"It looks like we're on our way to having a great science mission," said USMP-4 Mission Manager Sherwood Anderson. "We've gotten a good start on science for this mission, and all of our systems are performing well."

USMP-4 investigations are focused in the areas of materials science, combustion science and fundamental physics.

From right, United States Microgravity Payload-4 Operations Leads Bryan Blair, Kim Krome and Pat Cooney of the Mission Operations Laboratory, applaud with Web Controller Becky Grimaldi as they watch the launch of Space Shuttle Columbia, beginning the 16-day mission on which USMP-4 is the primary payload.
Photo by Terry Leibold

The USMP systems have worked so well, in fact, that the calibration of one experiment has produced the most precise measurement of temperature ever recorded in space. As part of the Confined Helium Experiment, scientists achieved a temperature measurement to a precision of about one-tenth-of-a-billionth of a degree Kelvin.

While the experiment was designed to help scientists better understand how making electronic parts smaller ultimately affects their performance, Peter Curreri, mission scientist for the Fourth U.S. Microgravity Payload, said the ramifications for fundamental physics could be even more profound.

"The information we learn from the experiment can be applied to future generations of microprocessors," Curreri said.

In another experiment, dendrite crystals — structures which resemble tiny pine trees — are being grown aboard Columbia in a study designed to improve metals such as those in automobiles and jet engines. Materials are being melted and resolidified to study near-perfect dendrite formation in the microgravity environment of space. According to one of the study's investigators, Research Assistant Matthew Koss of Rensselear Polytechnic Institute at Troy, N.Y., new, pertinent data has already been gained from dendrite growth cycles completed early in the mission.

Materials science was the focus of one of the investigations. Astronaut crew members conducted the work inside a thermal chamber in the Microgravity Glovebox. Scientists hope to

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Littles Presents Five Awards For Contractor Excellence

by Steve Calatrello

Marshall Center Director Dr. Wayne Littles Monday presented five Contractor Excellence Awards for 1997.

The annual award, designed to recognize the outstanding contributions contractors make to the Center, is presented to prime contractors, subcontractors and suppliers. The award may be presented in four categories, recognizing outstanding product and service performance in large and small businesses.

Two contractors, the Boeing Company - Rocketdyne Division and the Boeing Company - McDonnell Douglas Aerospace - Huntsville Division, earned recognition in the Large Business - Product category.

"Based on a renewed commitment to excellence, Rocketdyne set out in 1994 to strive for 'world class' status as the Agency's

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Reception for Littles Set for Dec. 15

Marshall employees, on-site contractors and retirees are invited to a farewell retirement reception honoring Center Director Dr. Wayne Littles on Dec. 15 from 3:30 to 5:30 p.m. in the cafeteria of Building 4203. The event is free. A community farewell celebration honoring Littles will be in February.

Marshall, Firm Sign Licensing Pact for Knee Brace Work

by Bob Lessels

Horton's Orthotic Lab., Inc., of Little Rock, Ark., has signed a licensing agreement with the Marshall Center to manufacture an innovative knee brace. This new brace is designed to offer freedom of movement to patients suffering from a wide variety of lower extremity weaknesses.

Michael Shadoan and Neill Myers, two of the inventors of the knee brace, aren't medical researchers or physicians. Rather, they are members of a five-person team of NASA engineers who found a way to apply space technologies to help those recovering from strokes and injuries here on Earth.

The device, called the Selectively Lockable Knee Brace, will facilitate faster, less painful rehabilitation by allowing movement of the knee. Knee braces currently on the market lock the knee in a rigid, straight-leg position, or at a pre-set position of flexion or extension.

"The new brace design helps patients who have a loss of muscle control from as high as the thigh because of a stroke or accident," said Shadoan.

"The Selectively Lockable Knee Brace allows the knee to function while supporting the leg," Myers added. "The brace may be used by a patient recovering from a knee injury when the patient needs to use the knee, but the knee cannot carry the full weight of the patient."

The upper part of the brace attaches around the thigh with the lower part secured by a stirrup around the shoe.

"It works by allowing the knee to bend when weight is not on the heel," said Myers. "Once weight is placed on the heel, the knee brace locks into position."

Shadoan, Myers, and co-inventors John Forbes, Kevin Baker and Darron Rice worked for three years to design the prototype. Through the Technology Transfer Office at Marshall, these rocket engineers were able to apply space technologies to the development of a product needed on Earth. "The knee brace is a spin-off of technology used in developing propulsion systems at Marshall," said Shadoan. "Mechanisms and materials used in propulsion systems were applied to the design of the knee brace."

Field tests on the original design were conducted in 1996 and early this year. With the information the tests provided, the NASA team made adjustments to the brace and offered their design for commercial licensed production.

Horton's Orthotic Lab, Inc., has been a partner in the tests and has signed the exclusive license agreement to manufacture the brace.

STS-87 Science Teams Happy With Experiment Results So Far

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discover how to create a uniform mixture of the liquids that form certain metal alloys, with application ranging from simple bearings to complex superconductors.

Researchers have completed several measurement cycles in the MEPHISTO furnace to study what happens when materials transition from a liquid to a solid, at a point known as the solid-liquid interface. Results from the experiment are expected to refine theoretical models of how metals mix.

Processing of the first samples in the Advanced Automated Directional Solidification Furnace began late last week. Three different lead-tin-telluride crystals were inserted into the furnace, designed for growing crystals in microgravity. The facility, using precise temperature control, allows for gradual growth of large, nearly perfect crystals.

Monday's recovery of the Spartan 201-04 satellite required some adjustments in the USMP timeline, but the operation had no major impact on the mission's original plan, according to Johnson.

"The original flight plan included a spacewalk to practice International Space Station procedures," explained Assistant Mission Manager Jimmie Johnson. "So after this short break, we're continuing with our planned timeline."

In another experiment, not part of USMP-4, a team of engineers at Marshall's Mission Control Center received their first data from the Video Guidance Sensor (VGS) flight experiment during deployment of the Spartan satellite Friday afternoon.

"We got all of the data we had planned to get during the deployment phase," said Dallias Pearson, chief engineer for the the project.

The VGS is a test of the "eyes" of a system that could enable spacecraft to link up automatically in orbit.

Combined Federal Campaign (CFC) Chairperson Steve Gaddis, left, and Co-Vice Chairperson for Promotion Jim Frees show how the Marshall community helps CFC recipient organizations through contributions. The 1997 campaign donations exceeded $445,000.

Photo by Dennis Olive

Contractor Excellence Awards Recognize Outstanding Performance

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Space Shuttle Main Engine contractor," said Littles. "Their roadmap to 'be the best' resulted in a dynamic turnaround. Since 1994, only one Shuttle flight was delayed by the Space Shuttle Main Engine."

Rocketdyne's value to NASA was acknowledged last year when they were presented with the Agency's George M. Low Award for quality and excellence.

McDonnell Douglas has worked with the Marshall Center since 1977 in the development, integration and operation of the Spacelab family of pressurized and unpressurized carriers. "This outstanding organization has demonstrated its excellence by achieving 100 percent mission success on more than 35 missions flown to date involving Spacelab hardware," said Littles.

In the Large Business - Service category, Sverdrup Technology - Marshall Space Flight Center Group was recognized for "numerous outstanding contributions to the Marshall mission by underpinning the technical excellence of Center space transportation and space system projects and by supporting the development and application of space and space-related technologies," said Littles. Sverdrup has served as support contractor for the Science and Engineering Directorate since 1989.

Summa Technology garnered the Small Business - Product award for the manufacturing and engineering tasks they performed on ground support equipment at the AXAF Calibration Facility. "In 1996," said Littles, "NASA selected Summa Technology to be the source for the Low Cost Booster Engine. Their performance on the AXAF Facility was meritorious and, to date, they have met every schedule incentive milestone for the delivery of components for the Booster Program."

Distributed Information Systems, a major subcontractor to Computer Sciences Corporation under the PrISMS contract, won in the Small Business - Service category. In addition to providing the technical support and sustaining engineering for a large part of Marshall's administrative applications, Distributed Information Systems supports the Dryden Flight Research Center's administrative applications as well as the NASA-wide payroll consolidation effort at Marshall. Littles said their impact on the Center and NASA "is far greater than their 70 employees would indicate."

A committee of representatives from across the Center reviewed award applications, scoring them on contract performance and customer satisfaction; schedule; cost; long-term organizational initiatives to respond to the Center's strategic aspirations; leadership and continuous improvement; innovative management and technology breakthroughs; and items of special interest to Marshall.

The Marshall Center each year nominates recipients of its Contractor Excellence Award for the George M. Low Award, which recognizes suppliers who demonstrate sustained excellence and outstanding achievements in quality management.

Recipients of the Contractor Excellence Awards are from left, John Plowden, Boeing/Rocketdyne; Steve Chapman, Distributed Information Systems; Volker Roth, Boeing/McDonnell Douglas; Dr. Robert LeMaster, Sverdrup; and E.C. Lee, Summa Technology. ***Photo by Terry Leibold***

Christmas Dance Set for Dec. 6

The annual Marshall Center Christmas Dance will be held Dec. 6 in the Von Braun Center Exhibit Hall.

Doors will open for the semi-formal event at 6 p.m., and there will be continuous music from 7 to 11 p.m. by two bands. The Little Big Band will provide "oldies and smoothies," and the Nite Owls will play rock and disco music. The bands will alternate every half hour. Non-alcoholic punch and a variety of hors d'oeuvres will be served, and cash bars will be available.

All seats will be reserved, and NASA employees, retirees, and on-site contractors can purchase tickets for $6 each; guest tickets are $8. Tickets are being sold at the Marshall Activity Building (4752) from 11:30 a.m. to 12:30 p.m. each weekday.

Jeff Cobb and Kathy Forsythe of Marshall's Education Programs Office show examples of literature that was displayed during a Spacelink exhibit held at the U.S. Space and Rocket Center last week. The exhibit was in conjunction with American Education Week.

Employee Ads

Miscellaneous

★ Hay, mostly fescue, large bales, $2.25 per bale. 837-2461
★ Washer and dryer, $100; truck bed trailer, $100; small microwave, $50. Leave message. 828-2466
★ Magnavox, hi-fi stereo VCR, w/VCR Plus, $150. 837-0085
★ Berkline love seat, green, $200; Nordic Track Excel, $250. 890-0499
★ Two tickets to SEC football championship game. 534-1364
★ Christmas tree, 9 1/2 ft., silk, with folding branches, $65. 881-4748
★ Antique cash register, circa 1900, $500 o.b.o. 880-8134
★ Sega Genesis, includes controller, 5 games, $120. 881-5088
★ Daiwa, MF 110 golf clubs, 2-SW, TR x 70, graphite shafts, $295. 971-9710
★ Golf clubs, bag, cart, $65; Fisher CD player, $25; wardrobe, $150. 536-8951
★ Hunter's tree stand, Featherlite Chief, never used, $150. 534-2368
★ British Enfield rifle smile, 303 CAL, $175; M-1 Grand rifle, w/bayonet, $625; Colt 45, auto, U. S. Govt. issue, $600. 883-1874
★ Four new, never mounted, Century Supreme 75, P195/75/R14 tires, $144. 859-8221
★ Yamaha console organ, solid state electronics, two keyboards plus pedals, bench, organ course, $350. 534-2368
★ Tickets, Madison Community Band annual Christmas concert, Dec. 6, 7-9 p.m., Bob Jones High School. 881-5088
★ Sega Saturn w/five games, three controllers, $125 o.b.o. 971-6885 weekdays after 5 p.m.
★ Camcorder carrying case $10, new RCA camcorder, 2-hour battery, $20; camera tripod $10. 971-9710
★ Nordic Track Walkfit Pro, $350. 306-0365
★ Fisher Price tricycle, $5; infant bedding, $35; toddler bed w/mattress, $25; toddler bedding, $12. 883-8483
★ MacIntosh Performa 550, HP Deskwriter 550C, Powerbook 150, two 28.8 modems, battery charger, software, all modems, $1,000. 534-1010
★ Sega Genesis 32X, ten Genesis, three 32X games, four controllers, $125 o.b.o. 971-6885 weekdays after 5 p.m.

Vehicles

★ 1985 Camaro, V-8, T-Top, automatic, 109K miles, $2,500. 837-0085
★ 1995 Buick Park Avenue Ultra, 69K miles, $19,500. 536-5100
★ 1965 Ford step-side pickup, new brakes, $950. 828-5550
★ 1994 Honda Passport, 38K miles, auto, PW, PD, cassette, $12,500.
★ 1995 Accord LX, 2-door, automatic, alarm, all power, green/beige, new tires, 54K miles, serviced, $12,000. 679-4932
★ 1987 Isuzu Pup Sport, automatic, air, 77K miles, maintenance records, $3,150. 883-1874 after 5 p.m.
★ 1991 Ford Explorer XLT, 4-door, 2WD, leather, trailer hitch, cruise, 130K miles, $6,000. 859-4156
★ 1991 Celica ST, maroon, gray cloth interior, 5-speed, 105K miles, $6,700. 880-9025

Wanted

★ 5 to 6 person tent, prefer dome style, windowed, with rain tarp. Must be in very good shape. Call 955-8370 or e-mail to: jdstephens@juno.com.
★ Rent dog shock collar. 881-6595

Center Announcements

☛ ***Black History*** — All interested parties are invited to participate in the annual Black History Program scheduled for February 1998. Volunteers are needed to serve on various committees to help plan activities that will be presented throughout the month of February. Please contact Jan Matthews at 4-0420 or Ollie Ragland at 4-0352 or by e-mail. Responses are due NLT Nov. 26.

☛ ***1997-98 Hoops*** — The 1997-98 MSFC basketball season is underway. The league will be structured as it has been in the past with three divisions and will begin in late November and run through March. If you are interested in entering a team or joining a team, call Chris Calfee at 4-5788 or e-mail-chris.calfee@msfc.nasa.gov.

☛ ***Circus*** — The Ringling Bros.,Barnum and Bailey Circus will be in Huntsville Dec. 3-7. All NASA employees, retirees and on-site contractors can take advantage of a $2.50 discount (per ticket) for performance scheduled Dec. 4 at 7:30 p.m. and Dec. 6 at 3 p.m. Ticket prices are $13.50 (reg. $16) or $7.50 (reg. $10), depending on seating choices. These prices are only available through the Exchange if a total of 25 or more tickets are purchased at one time. Seats will be assigned in blocks of 25 or more by the Von Braun Center. Early requests will receive priority. There are no further reductions for childrens' tickets. Contact the Exchange Office (bldg. 4752) with the name of employee, number of tickets, and full payment.

☛ ***Bookfair*** — The NASA Exchange is sponsoring the semiannual Bookfair, Dec. 2-4 in building 4200, room G-13 from 8 a.m. to 4 p.m. A variety of hardback books, including best sellers, cookbooks, gardening, biographies, sports, and children's selections will be offered at substantial discounts.

☛ ***Toastmasters International*** —The MSFC Information Systems Toastmasters Club will meet on Dec. 1 at 11:30 a.m. in the 4610 cafeteria conference room. For more information call Debbie Hagar at 961-4992 or Lee Johns at 544-5142

☛ ***Auto Service*** — The Auto Service will be closed Nov. 27-28 for the Thanksgiving holiday. The facility is located in building 4678 and regular hours of 7:30 a.m. to 5 p.m. will resume Dec. 1. Call 881-7640 to schedule work.

☛ ***Stop Abuse*** — Aware of waste, fraud or abuse? Telephonically contact the MSFC Office of Inspector General at 544-9188 or send complaints to Mail Stop M-DI. Confidentiality will be maintained.

☛ ***FEHB*** — The Federal Employee Health Benefits open season extends from Nov. 11 thru Dec. 8. Comparison charts and brochures will be available through your administrative office.

Job Opportunities

CPP 98-7-SH, AST, Mission Operations Integrations, GS-801-14 (2 vacancies). S&E, Mission Operations Lab., Mission Planning Division & Operations Engineering Division. Closes Dec. 8.

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